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Application No.:	10/710,706	Conf. No.:	4705
Applicant:	Angyal et al.	TC/AU:	2813
Filed:	07/29/2004	Examiner:	Harrison, Monica D.
Customer No.:	23550	Docket:	FIS920040028US1 (IBMF-0053)
Title:	INTERLEVEL DIELECTRIC LAYER AND METAL LAYER SEALING		

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Sir:

Applicants respectfully request a panel of experienced examiners perform a detailed review of appealable issues for the above-identified patent application pursuant to the Pre-Appeal Brief Conference Pilot Program. Applicants submit that the above-identified application is not in condition for appeal because the Office has failed to establish proper rejections based on an error in fact and in law. Claims 1-20 are pending in this application.

Turning to the rejection, in the Final Office Action, claims 1-20 are rejected under 35 U.S.C. §102(b) as allegedly being unpatentable over Chen et al. (U.S. Patent No. 6,399,486), hereinafter "Chen". Applicants submit that this rejection is clearly not proper and without basis. Applicants submit that the application is not in condition for appeal because the rejection is defective due to errors in fact and in law.

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A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987); see MPEP ' 2131, p. 2100-70. With regard to the 35 U.S.C. §102(b) rejection over Chen, Applicants assert that Chen does not teach each and every feature of the claimed invention. Accordingly, the Office has failed to prove a *prima facie* case of anticipation, and Applicants request withdrawal of the rejection.

As argued in the April 28, 2006 After-Final Request for Reconsideration, at least one feature of the claimed invention is not taught by the reference. With regard to claim 1, Chen fails to disclose, *inter alia*, etching through an interlevel dielectric (ILD) layer and *partially* into an underlying cap layer thereby *leaving* an opening through the ILD layer and a *remaining portion* of the underlying cap layer. (emphasis added)(See claim 1, as similarly recited in claims 8 and 16.)

Interpreting Chen only for the purposes of this request, Applicants submit that Chen merely discloses a method that employs a special annealing process to a dual damascene structure for removing defective copper voids. Abstract. There is simply no teaching, or suggestion, in Chen of etching into an underlying cap layer whatsoever, partially or otherwise. In the Office Action, the Office alleges that Chen discloses "the method comprising the steps of: etching through an interlevel dielectric (ILD) layer (Figure 2, reference 4) and partially into an underlying cap layer (Figure 2, reference 6) thereby leaving an opening through the ILD layer and a remaining portion of an the underlying cap layer." (Final Office Action, page 2, item 2).

The alleged cap layer (i.e., reference 6) in Chen is an etch stop layer that does not get partially etched into so as to leave a remaining portion, but is fully removed (See e.g., Fig.2). “[T]he etch back and *removal* by dry etch, reactive ion etch (RIE), of the etch stop layers 6 and 8 in the exposed via and trench regions.” (emphasis added)(Col. 7, lines 12-14). Chen, on whole, addresses the need to remove harmful microscopic defects 10 that occur on the exposed surface of insulator layer 7 as a result of the full removal of the etch stop layers. “[S]ome microscopic defects 10 [] occur on surface of the insulator layer 7, as a *direct result of the removal of the etch stop/liner material.*” (emphasis added)(Col. 7, lines 14-17). Further, as it is desirable to ultimately provide an effective connection between a copper metal interconnect 5, a copper seed layer 16, and a copper deposition 18 in the dual damascene structure of Chen and that the copper metal interconnect 5 is beneath the aforementioned etch stop layer 6, it is entirely technically unfeasible to only partially remove the etch stop layer 6. See e.g., figures 4-6. In sum, Chen is completely silent regarding any type of underlying cap layer, or of any partial etching therethrough.

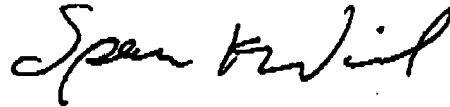
Accordingly, Applicants submit that there is no disclosure or suggestion in Chen of a method that includes a step of etching through an ILD layer and partially into an underlying cap layer with respect to claim 1. Therefore, Applicants respectfully request withdrawal of the rejection.

In the Office Action, independent claims 8 and 16 are rejected under the same rationale as claim 1. As a result, Applicants herein incorporate both arguments submitted above with respect to claim 1. Accordingly, Applicants respectfully request withdrawal of the rejection.

With respect to features in the dependent claims not specifically referenced herein, the dependent claims are believed to be allowable based on the above arguments, as well as for their own additional features.

Applicants respectfully submit that the application is not in condition for appeal. Should the examining panel believe that anything further is necessary to place the application in better condition for allowance or for appeal, they are requested to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,



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